1   What is claimed is:

2

3   1. An apparatus for maintaining the privacy of a plaintext message transmitted

4   over a non-secure channel between a transmitting party and a receiving party without

5   cryptographic key exchange between said parties, comprising:

6   (a) first transformation means for embodying the plaintext message in a non-

7   reversible first output;

8   (b) second transformation means for generating a second output which is a

9   reversible second transformation of said first output, such that said second output is non-

10   reversible;

11   (c) first transmitting means for transmitting said second output from the

12   transmitting party to the receiving party;

13   (d) third transformation means for generating a third output which is a reversible

14   third transformation of said second output, such that said third output is non-reversible;

15   (e) second transmitting means for transmitting said third output from the receiving

16   party to the transmitting party;

17   (f) reverse second transformation means for generating a fourth output through

18   reversal of the second transformation applied to said third output, such that said fourth

19   output is non-reversible;

20   (g) third transmitting means for transmitting said fourth output from the

21   transmitting party to the receiving party;

22   (h) reverse third transformation means for generating said first output through

23   reversal of the third transformation applied to said fourth output; and

1   (i) extracting means for extracting the plaintext message from said first output in

2   the possession of the receiving party.

3

4   2. An apparatus according to claim 1, wherein said first transmitting means is

5   also said third transmitting means.

6

7   3. An apparatus according to claim 1, wherein

8   (a) said first transformation means comprises a first mathematical function

9   creating an embodiment of the plaintext message in a non-invertible first output;

10   (b) said second transformation means comprises an invertible second

11   mathematical function;

12   (c) said third transformation means comprises an invertible third mathematical

13   function;

14   (d) said reverse second transformation means comprises the inverse of said

15   second mathematical function; and

16   (e) said reverse third transformation means comprises the inverse of said third

17   mathematical function.

18

19   4. A method for securely transmitting a plaintext message from a transmitting

20   party to a receiving party over a non-secure channel, comprising the steps of:

21   (a) generating a first transformation of the plaintext message such that the

22   plaintext message is embodied in a first output of said first transformation and said first

23   output of said first transformation is non-reversible;

1   (b) generating a reversible second transformation of said first output of said first

2   transformation such that a second output of said second transformation is non-reversible;

3   (c) transmitting said second output of said second transformation from the

4   transmitting party to the receiving party;

5   (d) generating a reversible third transformation of said second output of said

6   second transformation such that a third output of said third transformation is non-

7   reversible;

8   (e) transmitting said third output of said third transformation from the receiving

9   party to the transmitting party;

10   (f) reversing said second transformation on said third output of said third

11   transformation such that a fourth output of said reversal of the second transformation is

12   non-reversible;

13   (g) transmitting said fourth output of said reversal of the second transformation

14   from the transmitting party to the receiving party;

15   (h) reversing said third transformation on said fourth output to yield said first

16   output of said first transformation; and

17   (i) extracting the plaintext message from said first output.

18

19   5. A method according to claim 4, wherein said first transmitting means is also

20   said third transmitting means.

21

22   6. A method according to claim 4, wherein:

1   (a) said first transformation comprises a first mathematical function creating an

2 embodiment of the plaintext message in a non-invertible first output;

3   (b) said second transformation comprises an invertible second mathematical

4 function;

5   (c)said third transformation comprises an invertible third mathematical function;

6   (d) said reverse second transformation comprises the inverse of said second

7 mathematical function; and

8   (e) said reverse third transformation comprises the inverse of said third

9 mathematical function .

10

11   7. An apparatus for maintaining the privacy of a plaintext message conveyed

12 over a non-secure channel between a transmitting party and a receiving party wherein:

13   (a) the transmitting party neither possesses nor uses any cryptographic key that

14 was created by the receiving party;

15   (b) the receiving party neither possesses nor uses any cryptographic key, that was

16 created by the transmitting party;

17   (c) neither the transmitting party nor the receiving party exchanged a

18 cryptographic key with the other party, and

19   (d) the plaintext message is transmitted to and understood by the receiving party,

20 but cannot be understood by any third party who was privy to all transmissions between

21 the transmitting party and the receiving party.

22

1   8. A method for maintaining the privacy of a plaintext message conveyed over a

2 non-secure channel between a transmitting party and a receiving party wherein:

3   (a) the transmitting party neither possesses nor uses any cryptographic key, that

4 was created by the receiving party;

5   (b) the receiving party neither possesses nor uses any cryptographic key, that was

6 created by the transmitting party;

7   (c) neither the transmitting party nor the receiving party exchanged a

8 cryptographic key, with the other party and

9   (d) the plaintext message is transmitted to and understood by the receiving party,

10 but cannot be understood by any third party who was privy to all transmissions between

11 the transmitting party and the receiving party.

12

13   9. An apparatus according to claim 1, wherein said plaintext message comprises a

14 cryptographic key.

15

16   10. A method according to claim 4, wherein said plaintext message comprises a

17 cryptographic key.

18